Spring 2015

The University of Akron Exercise Science: Pre-Physical Therapy: Past, Present, Future

Jonathan E. Vichosky
University of Akron Main Campus, jev10@zips.uakron.edu

Please take a moment to share how this work helps you through this survey. Your feedback will be important as we plan further development of our repository. Follow this and additional works at: http://ideaexchange.uakron.edu/honors_research_projects

Part of the Educational Assessment, Evaluation, and Research Commons

Recommended Citation
http://ideaexchange.uakron.edu/honors_research_projects/175

This Honors Research Project is brought to you for free and open access by The Dr. Gary B. and Pamela S. Williams Honors College at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Honors Research Projects by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.
THE UNIVERSITY OF AKRON EXERCISE SCIENCE: PRE-PHYSICAL THERAPY:
PAST, PRESENT AND FUTURE

Jonathan Vichosky
School of Sport Science and Wellness Education

Honors Research Project

Submitted to

The Honors College

Approved:

Melissa Smith
Honors Project Sponsor (signed)

Melissa G. Smith
Honors Project Sponsor (printed)

Michael Dunbar
Reader (signed)

Michael O. Dunbar
Reader (printed)

Rachelle Keppler
Reader (signed)

Rachelle Keppler
Reader (printed)

Accepted:

VICTOR PINHEIRO
School Director (signed)

VICTOR PINHEIRO
School Director (printed)

Smith
Honors Faculty Advisor (signed)

Smith
Honors Faculty Advisor (printed)

Date 4/30/15

Dean, Honors College
# TABLE OF CONTENTS

LIST OF FIGURES AND TABLES.................................................................3

ABSTRACT........................................................................................................4

INTRODUCTION...............................................................................................5

REVIEW OF LITERATURE.................................................................................8

METHODS.........................................................................................................16

RESULTS............................................................................................................18

CONCLUSION AND DISCUSSION.................................................................27

FUTURE DIRECTIONS.....................................................................................30

REFERENCES..................................................................................................31

APPENDIX A: SURVEY TOOL........................................................................33
# LIST OF FIGURES AND TABLES

**TABLE 1:** Respondents by Graduation Year...........................................................................................................17

**FIGURE 1:** Respondents by Gender.........................................................................................................................18

**FIGURE 2:** Cross-Tabulation of Research Question 1..............................................................................................19

**FIGURE 3:** Cross-Tabulation of Research Question 2..............................................................................................20

**TABLE 2:** Success of Introductory Courses................................................................................................................20

**TABLE 3:** Success of Exercise-Based Classes............................................................................................................21

**TABLE 4:** Success of Supplementary Classes............................................................................................................22

**TABLE 5:** Success of Anatomy Based Classes............................................................................................................23

**FIGURE 4:** Class Type Ranking...............................................................................................................................24

**TABLE 6:** Course Emphasis......................................................................................................................................24

**TABLE 7:** Extent of Learning Based on Classes Offered............................................................................................25

**FIGURE 5:** Graduating Year from the University of Akron AND How Would You Rate the University of Akron Exercise Science: Pre-Physical Therapy Program........................................................................................................26
ABSTRACT

PURPOSE: The purpose of this study was to increase Akron’s knowledge on opinions of the effectiveness of the current Exercise Science: Pre-Physical Therapy Program among its alumni. A cross-sectional retrospective study was done to gain a better understanding of The University of Akron’s opinion of its students on the effectiveness of the current Exercise Science: Pre-Physical Therapy Program. METHODS: A single contact survey was sent via email through Qualtrics to the University of Akron Exercise Science: Pre-Physical Therapy students from this current graduating year (2014-2015) as well as graduates from the past four years. This survey included questions on the effectiveness of classes in the preparation for graduate school, what classes were considered to be the most helpful, and what classes were considered to be the least helpful. RESULTS: No significant relationship was observed ($p < .05$) between: whether students viewed the courses taken in the Exercise Science: Pre-physical Therapy track helped their academic career by gauging whether they have been accepted, currently in, or graduated from graduate school and whether graduating with a degree in Exercise Science: Pre-Physical Therapy and being accepted, currently in, or graduated from a Doctorate of Physical Therapy (DPT) program. Alumni found that exercise-based and anatomy based classes were the most effective courses. Exercise based classes were rated as the most relevant, followed by anatomy and kinesiology, introductory classes, and supplementary classes. Alumni saw fourth year courses, lab based courses, and co-op and experiences as the most influential in their learning experience. First year courses and capstone and final projects did not rate as high in their learning experience. Limiting factors are discussed in the discussion portion of the report. CONCLUSIONS: This study supports previous research finding classes based on kinesthetic learning styles to be most valued among pre-professional health care students. This information allows The University of Akron, as well as other educational institutions to improve department programs.
INTRODUCTION

This project’s purpose is to further The University of Akron’s knowledge on opinions of the effectiveness of the current Exercise Science: Pre-Physical Therapy Program among its alumni. A review of the literature revealed there were few schools that had ongoing surveys that were collected with the sole purpose of bettering individual programs. The majority of school surveys does not look to gather information on a specific program but looked at general characteristics of graduates for the school’s overall betterment. Consequently, there are very few resources/surveys to look at the success of a program where the students’ personal opinions are concerned. The few schools that have looked at graduate programs have taken time to measure and re-measure their individual success (Bosshart, S., Wentz, M., Heller, & Tynan, 2009; Landrum & Lisenbe, 2008; Ogletree & Matile, 1998). The difference between this survey and others is that it narrowed down the scope of question asked. Specifically, it surveys students who were encouraged to pursue graduate programs. It looked at why they did not pursue particular careers paths. The questions were chosen to examine how they viewed the current Pre-Physical Therapy program; to see if it catered to what they saw as important when considering their career goals. It also looked at whether particular services offered by the university catered to the learning needs of the students. These include learning styles, career advancement opportunities, and general academic advising. By recognizing potential weak points in a program, The University of Akron can strengthen them for the betterment of the student population.

Before constructing the survey, it was necessary to look at different aspects of the process. Several important questions were explored in the literature review: how the population uses the online survey tool, why the online survey tool is used, the different forms a survey can
take, the effectiveness of a survey, some of the benefits of this particular survey, and some of the potential downsides of this type of survey, whether some of the potential downsides are negligible when measuring the success of a survey, likely respondents to a survey, and how to reduce bias in a survey.

Another important question to ask is how students measure success. By looking at previous research, questions on the survey can be catered to what success looks like. Many important resources listed learning styles and success, and gender and learning styles as important in measuring success (Breckler J, Joun D, & Ngo H., 2009). It is important to look to literature when asking questions concerning what learning styles are useful and comparing learning styles and their usefulness. These questions can also give us a better understanding of why students view success the way they do.

It is important not to try and recreate a survey from scratch, but to look at other institutions and how they created surveys to measure their success in their undergraduate programs based on their alumni (Avcıoğlu, G. Ş., 2014). It is important to examine their process of sending surveys over the internet, their success rate as opposed to other methods. Based on these trends, it was decided that the survey would be sent out to alumni from this graduating year (2014-2015) as well as graduates from the past four years.

This project consisted of a one contact survey sent via email to The University of Akron Exercise Science: Pre-Physical Therapy students from this current graduating year (2014-2015) as well as graduates from the past four years. Data collected via an online survey was analyzed for trends regarding curriculum value. The survey included questions on the effectiveness of classes in the preparation for graduate school, what classes were considered to be the most
helpful, and what classes were considered to be the least helpful, whether the Pre-Physical Therapy (PT) track enabled them go onto PT graduate programs, and an overall quality scale.

This study attempted to answer these research questions:

Research Question 1: Is there a correlation between whether students viewed the courses taken in the Exercise Science: Pre-physical Therapy track helped their academic career by gauging whether they have been accepted, currently in, or completed graduate school?

Research Question 2: Is there any correlation between graduating with a degree in Exercise Science: Pre-Physical Therapy and being accepted, currently in, or graduated from a Doctorate of Physical Therapy (DPT) program?

Research Question 3: What is the alumni’s view on current curriculum material?
LITERATURE REVIEW

The climate of health care schooling, particularly physical therapy, is ever changing, always improving, and is a culmination of past knowledge, best teaching methods, and success measured by those who have undergone schooling. A survey is a tool often employed to measure the success of a program over the long term. It is a relatively easy, cost effective method of research. As stated by Avcioğlu (2014), due to the increase in globalization of the internet and increase in its popularity as both a tool for business and as a means for entertainment, there has been an increase in the amount of surveys sent out with the internet serving as the primary method of service. Internet surveys can be seen in multiple scopes of industries and professions, including but not limited to: economics, management, education, sociology, and psychology. These internet based surveys are seen in two basic forms: 1) surveys implemented using a website as a launching pad where users can complete the survey and 2) e-mail based, where the survey tool is sent to a prescribed set of known e-mails and respondents can then complete the survey from there or a link provided (Avcioğlu, 2014). Due to use in multiple fields over a period of a long time, surveys via the internet have become more recognized as an important method in survey collection. Originally only seen in the marketing and social science fields, survey tools via the internet have spread to the sciences and health sciences fields (Aviciglu, 2014). Due to increased usage of this particular survey tool there has also been an increase in the literature pertaining to this survey tool. This literature compares and contrasts the internet survey tool with other survey tools, how to increase response rates, and how to increase data quality. Although the internet based survey tool has become a valid tool in multiple fields it still has many areas of controversy. These topics of controversy include: response rates, data quality and selection of sample (Avcioğlu, 2014). When considering response rates, it should be noted that based on prior research done by (Gittleman & Tirmarchie, 2009; Sparrow, 2007; Toepoel, Das & van Soest, 2008), there was a definite difference in response behavior between “professional” and “non-professional” respondents. In these studies,
“professional” was defined as those who have hold a full time job and a college education and “non-professional” was defined as those who do not have a college education and a full-time job or a college education with no job. Between these groups, there was no difference found between non-response rates. Even though this is true, drop-out rates of non-professionals are slightly higher than those of the professionals (Silber, Lischewski, & Leibold, 2013). This means that regardless of the alumni’s current status of schooling, employed, or not employed, there should not be a decrease in response to the survey based on current career standings. The internet based survey tool is generally viewed as having a lower response rate than other forms of surveys. It is true, however, that the internet survey can achieve response rates that are good enough to the point that other methods, tools, and/or applications are not needed (Avcioğlu, 2014). There are methods commonly used to increase response rates. These include: survey explanation, survey design, and ease of survey completion. Information concerning why the survey is being sent and why prospective participant involvement is important is a method of increasing survey response rates. Another method is sending reminder emails. Yet another method includes offering incentives and motivators such as monetary compensation or intellectual accomplishment. However, monetary rewards seems to defeat the purpose of internet based surveys as they are initially low cost and the main reason for choosing one mode of survey over another (Avcioğlu, 2014). When looking at the response quality of data from alumni survey, it is important to not focus on response rates, but instead, focus on the representativeness of the respondents. It is suggested that even though alumni response rates may be lower, the data collected may be just as representative as data collected with a high number of respondents. Although this might be the case, as found in research, more studies need to be done in order to verify the quality of data with lower response rates (Lambert & Miller, 2014).

Another concern is data quality: whether the respondents understood the survey and answered it completely in the most unbiased way (Avcioğlu, 2014). Data quality is difficult to measure and it is very
important to take into consideration the increased variance in data due to a possible decreased sample size and variance in individual responses when taking into account surveys used for the evaluation of faculty. Variances in answers can be seen in differences in styles of teaching from professors, quality of instruction, and sample variation (Nowell, Gale, & Handley, 2010). In order to have the best quality and response in a survey it is important to have clarity. Clarity can be maximized by having appropriate spacing, boxes, vertical spacing, shading, and grids so that the instructions and questions of the survey are not split over pages. Readable contrast and font size should be used. Italics should not be used. Pre-coded responses should be used primarily while open ended questions should be kept to a minimum (Dillman, 2006). It has to be long enough to provide definitive results while short enough to keep the interest of the survey taker. The average survey takes around 10 minutes to take. This allows enough time for important questions to be asked. This allows a short enough time for the respondent to not become bored with the survey and fail to start it or complete it. It is important to take into consideration the response rates and dropout rates of those that participate in surveys. It is important to have the respondent feel involved even though there is no monetary reward. Intrinsic rewards can include a feeling of being directly involved in the program, even post-graduation. There has to be direction in the way questions are asked; each one should have purpose and one question should lead to the next in a way that makes sense sequentially (Dillman, 2006). In terms of effectiveness of surveys, it is thought that the number of respondents to a survey should dramatically increase the data relevance to the study. This is not the case as a study by Lambert, A. D., & Miller, A. L. (2014) who used many instruments to define the success of a survey. Limiting success based on surveys response is not the best way to determine its success.

Among the questions asked on the alumni surveys are those that attempt to quantify best teaching methods. Many teaching styles are incorporated into classes. Many students have various learning styles. It is difficult to incorporate the two so that both the teacher and student are in unison
with one another. Wording for different learning styles are based on the type of test administered. They do fall into common categories. The most common types of learning styles are auditory, visual, and hands-on/lab based. These learning styles are the way in which students are best suited to learn, retain, understand, and reiterate information (Hess, D., & Frantz, J. M., 2014).

There has been research and literature compiled and composed on quantification of teaching methods. This includes research done at the University of the Western Cape. This research focused on undergraduate students from diverse cultural and socio-economic backgrounds. From these backgrounds there seemed to be differences between males and females. Males seemed to be oriented towards learning styles that used more of a thinking process (Philbin, M., Meier, E., Huffman, S., Boverie, P., 1995). This differed from prior research that states that students tended to learn by reviewing, observing or thinking as opposed to actually doing (Millar, 1998). After compiling various studies, no study concluded the same exact synopsis of teaching styles between gender. The learning styles included for males are abstract and reflective. For females, it tends to be more hands-on in a practical setting, affective and doing (Philbin et al., 1995). The study by Philbin et al. (1995) came to a conclusion that females in a pre-physical therapy setting learn best in an environment that incorporates watching and feeling or doing and thinking while males learn best in an environment that incorporates thinking and watching. Females tend to be more visual learners while male tend to learn better by thinking through a situation. Kolb’s theory states that if a student has a preferred learning style, then they are more likely to be able to be able to problem solve if the learning style is matched with the student (Wessel J. et al., 1998). It is stated, that in order for students to succeed to the best of their ability they must be aware of their own learning style. A study by Hess & Frantz (2014) used three questionnaires to determine first year pre-physical therapy students learning styles. It was found that the majority of students learn by doing, but that facts are still an important foundation. It is thought that physical therapy students may learn better if the concepts are taught in theory but then the students are allowed
to apply them in practice. This supports their research where the majority of students where
categorized into the kinesthetic learning category. As stated by Hess & Frantz (2014), to effectively
promote education in this field, educators should provide students with real life learning situations such
as labs and practical situations.

It has been found that when educators matched learning style preferences with their students, students had greater scores than when students were not taught according to their learning style preferences (Mangino & Griggs, 2003; Millar, 1998). When the learning styles across multiple fields were taken into account, many focused on one learning style. However, when looking at students who are in the medical profession, there are multimodal learning expectations. Male premedical students are twice as likely to have multimodal learning preferences when compared to students who are not entering the medical profession (Breckler, Joun, & Ngo, 2009). Studies have also looked at learning styles and grade point averages. In a study by Shenoy & Shenoy (2013), there was no comparison found between learning styles and grade point average. Learning styles merely make learning more enjoyable and easier. On the other hand, it has been found that students who preferred a multimodal style of learning scores better marks in school than students who did not have a preference (Tantawi, 2009). It could be surmised the enjoyment of class material leads to higher marks in a particular class. However, since there has been so much digression in the conclusions reached in various sources of literature, there should be more research performed on learning modalities and academic success. A study by Wessel et. al (1999) concluded that pre-physical therapy students prefer to learn the theories and facts and then put them into practice. It was also found that there are no differences in learning style or problem-solving ability for students in different years of a program.

It is very important consider other school’s surveys as to not reinvent the wheel. Other universities, not limited to the medical field, are interested in measuring the effectiveness of their
undergraduate programs by asking alumni their perspective. Their surveys consisted of not only measuring the effectiveness of in class activities, but also of advising effectiveness. In a study by Landrum and Lisenbe (2008), it has been understood that to measureable outcomes of success include: the impact of professors due to their teaching styles, the entire structure of the major, and help from outside of class such as considering graduate school and career paths. In fact, in their particular survey, they found that help outside of class was a better predictor of satisfactory than when considering help inside of class. Also, students who believed that faculty and the department considered student success, such as strong advising services, as a main priority was a main consider when rating a high satisfaction level.

A restraint that was observed was the clear limitation that this survey was only sent to one institution. The problem when sending a survey to only when institution when it applies to an entire field, is that the results are very limited and do not reflect the field as a whole. Not only are the results limited, but it is also to decipher any biases in answering, questions that are irrelevant, questions that are confusing, and/or questions that might arise from misunderstanding. This means that any part of the survey might be intriguing and interesting, but the ability of the survey to explain and generalize it is very limited (Landrum & Lisenbe, 2008).

In a study by Bosshart et al., (2009), it was important to measure the amount of general success the students felt when acquiring their undergraduate degree. This was attained by asking questions such as whether undergraduates would enroll in the same program again or if they would attend the same university again if given the choice. It was also found through their survey that it was important to measure success in the graduates’ abilities to work in teams and have the ability to lead. Another measure of success was the department’s ability to provide future/career advising and placement services along with beyond adequate services related to enrollment and course advising, academic
advising and financial aid, and the amount of professional connections made. A non-academic area of success that was measured was the students’ awareness and appreciation of diversity within and out of the university. It was found that an underperforming area in their specific program was the value of senior year program courses. Areas that the program was unsuccessful included: preparation for community, civic and political roles and in developing preparation for financial management.

It was found that responses for the survey were higher for first year graduates as opposed to five-year graduates. It was also found that the value of education was held higher for five year graduates as opposed to new graduates. Two areas that were higher for new graduates were: mental well-being and rating of the digital environment. It was found that alumni surveyed one year after graduation ranked the department higher in the value of their education, placement services, and concern for individuals as opposed to those who were surveyed six years after graduation. Alumni were also asked to the value of education given the cost and investment of time and effort (Bosshart et. al, 2009).

In a study by Ogletree and Matile (1998), it was noted that response rates for surveys could be improved and attempts were made to do so. This included asking for responses directly on the survey, sending the survey in the middle of the summer, rather than at the end of the summer, and having no deadline for the response of the survey.

High ratings were received for questions based on faculty accessibility, faculty being interested in their courses, and enhancing student learning motivation. Low rating was received for questions based on helping students with future concerns, such as career advisement. It was noted that other departments have this exact problem as well when considering student success and career advising.

In a discussion on how to improve post graduate success, many ideas were given. It was noted that a joint force effort between student bodies, such as Greek life, and the department could be instrumental in preparation for graduating students. Along with this effort, it would be useful to expand
on the already present advising center by setting up a room totally designated to post-graduate ideas which includes pamphlets, posters, and sign up times to meet with an advisor. It was noted that finding time for the graduating classes of 700 to 800 students is difficult, next to impossible. A weekend class concerning post graduate life would be offered to those interested. This weekend class would be given by graduates and faculty alike. Some of the information offered would not be what a recent graduate would want to hear, such as the difficulty and competitiveness of not only job opportunities, but also graduate program acceptance. To add to all this, students may be too caught up in current course work to consider the immediate future. Some recent graduates immediately take up jobs that are not immediately related to their degree. With this degree, there are little immediate, well-paying jobs directly out of graduation. Due to this, it is very important that graduates have direction upon graduating (Ogletree & Matile, 1998).
METHODS

The subjects for this study were current and former students of The University of Akron’s Exercise Science: Pre-Physical Therapy (PT) track undergraduate degree program. The survey was sent to 227 graduates of The University of Akron with a degree in Exercise Science: Pre-PT within the past four (4) years or were part of this year’s (2014-2015) graduating class. Gender, age, ethnic background, health status, or any special populations were not targeted or required prerequisites for being recruited for this survey. The design of the project was a cross-sectional retrospective study. The methodology consisted of a one contact survey that was sent via email. This survey included questions on the effectiveness of classes in the preparation for graduate school, what classes were considered to be the most helpful, and what classes were considered to be the least helpful, whether the Pre-PT track enabled them go onto PT graduate programs, what school they are currently attending (in-state or out-of-state), their graduating GPA, and an overall quality scale. Questions on the survey were a combination of yes/no, Likert scale questions, as well as short response. The full survey instrument is included in Appendix A. Data was collected via an online survey data collection tool called “Qualtrics.” Privacy of the individual was protected by allowing the respondent to review, complete, and send in the survey at his/her own time, place, and setting. Only the researcher and adviser had access to the data and the data was stored on a password protected computer. The study was approved by the Institutional Review Board of The University of Akron. Consent for participation was implied by opening the survey and completing it after reading the Informed Consent explanation contained within the survey email invitation. A written signature was not collected due to very limited potential risks and rewards. The survey took approximately ten (10) minutes for participants to complete. Email lists were obtained from The University of Akron Alumni Office (for graduates during the 2010-2014 years) as well as The University of Akron’s School of Sport Science and Wellness Education for students graduating in the 2014-2015 year. Survey results were analyzed for measures of central tendency in the Qualtrics software program, and
statistical analyses were conducted using Microsoft Excel. Bivariate analyses were conducted with two-tailed $t$-tests on several items, with $p = 0.05$. 
RESULTS

The purpose of this study was to measure the success of The University of Akron’s Exercise Science: Pre-Physical Therapy degree program using this year’s graduating class as well as alumni response. There were 27 respondents to the survey in total. The majority of respondents, 9, were from this graduating year (2014-2015), with 7 respondents from 2013-2014, 6 respondents from 2012-2013, 4 from 2011-2012, and 0 respondents from 2010-2011 as seen in Table 1. There were 17 female respondents as opposed to the 10 male respondents as seen in Figure 1.

Table 1: Respondents by Graduation Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>9</td>
</tr>
<tr>
<td>2013-2014</td>
<td>7</td>
</tr>
<tr>
<td>2012-2013</td>
<td>6</td>
</tr>
<tr>
<td>2011-2012</td>
<td>4</td>
</tr>
<tr>
<td>2010-2011</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 1: Characteristics of Respondent by Gender

Several questions were asked to help gauge the success of UA’s Pre-PT curriculum: 1) Is there a correlation between being enrolled or graduated from graduate school and finding success in the
Exercise Science: Pre-Physical Therapy track? 2) Is there a correlation between students who have graduated with a degree in Exercise Pre-Physical Therapy attending graduate for a DPT or for another major? 3) How alumni view various parts of the Exercise Science: Pre-Physical Therapy Program. Figure 2 shows the results of the first research question: Is there a correlation between whether students viewed the courses taken in the Exercise Science: Pre-physical Therapy track helped their academic career by gauging whether they have been accepted, currently in, or completed graduate school?

![Figure 2: Cross-Tabulation of Questions](image)

Survey results reveal a non-significant relationship between the two questions, $p = 0.40$.

Figure 3 shows the results of the second research question: Is there any correlation between graduating with a degree in Exercise Science: Pre-Physical Therapy and being accepted, currently in, or graduated from a Doctorate of Physical Therapy (DPT) program?
Figure 3: Cross-tabulation of Survey Questions: Are you completing/completed graduate studies in the field of physical therapy? AND Did you graduate from The University of Akron with a degree in Exercise Science: Pre-Physical Therapy?

There was no significant relationship observed between these two questions, $p = 0.61$.

The following tables and figures illustrate findings of the third research question: What is the alumni’s view on current curriculum material?

Do you feel the introductory courses (Concepts of Health and Fitness, Intro to Exercise Science, etc.) successfully:

![Bar Chart Illustrating Effectiveness of Introductory-Level Courses]

**Table 2: Effectiveness of Introductory-Level Courses**

The vast majority of respondents indicated Introductory-Level classes were relevant to Exercise Science (85% answered “Much” or “A Great Deal”). A smaller majority indicated the Introductory-Level classes introduced subject matter (63% answered “Much” or “A Great Deal”), allowed for retention ((63% answered “Much” or “A Great Deal”), and helped in other classes (55% answered “Much” or “A Great Deal”).
Do you feel the exercise-based classes (Exercise Testing, Exercise Prescription, Exercise Leadership, etc.) successfully:

![Bar chart](image)

**Table 3: Effectiveness of Exercise-Based Classes**

The vast majority of respondents indicated Exercise-Based classes were relevant to Exercise Science (93% answered “Much” or “A Great Deal”). A smaller majority indicated the Exercise-Based classes introduced subject matter (89% answered “Much” or “A Great Deal”), allowed for retention (93% answered “Much” or “A Great Deal”), and helped in other classes (89% answered “Much” or “A Great Deal”).

Do you feel the supplementary courses (Nutrition, Organization and Administration for Healthcare Professionals, Medical Terminology, Stress Management, etc.) successfully:
Table 4: Effectiveness of Supplementary Courses

A little under half of respondents indicated supplementary classes were relevant to Exercise Science (48% answered “Much” or “A Great Deal”). A greater majority indicated the supplementary classes introduced subject matter (56% answered “Much” or “A Great Deal”), allowed for retention (63% answered “Much” or “A Great Deal”), and helped in other classes (48% answered “Much” or “A Great Deal”).

Do you feel the anatomy-based courses (Musculoskeletal Anatomy I and II, Kinesiology, etc.) successfully:
Table 5: Effectiveness of Anatomy-Based Courses

The vast majority of respondents indicated anatomy-based classes were relevant to Exercise Science (89% answered “Much” or “A Great Deal”). A smaller majority indicated the anatomy-based classes introduced subject matter (78% answered “Much” or “A Great Deal”), allowed for retention (85% answered “Much” or “A Great Deal”), and a great majority of respondents felt it helped in other classes (93% answered “Much” or “A Great Deal”).

Rank the relevance of class type in order from most (1) to least (4):
Overall, respondents ranked Anatomy/Kinesiology courses most relevant (59%), Exercise Based as second most relevant (37%), Introductory Classes as third most relevant (4%), and Supplementary Based as least relevant (0%).

Do you feel the courses offered should place more emphasis on:

Table 6: Ratings of Course Emphasis
The majority of respondents were satisfied with the amount of emphasis placed on written communication (74% as “Same”), mathematical skills (81% as “Same”), background in natural science (59% as “Same”), background in social science (% as “Same”), and theory related courses (55% as “Same”). The courses that could use more emphasis are: oral communication skills (62% as “More”), problem solving skills (56% as “More”), learning to think and reason (65% as “More”), understanding and relating to people (63% as “More”), and Application Courses Related to Exercise Science (63% as “More”).

Reflecting on the courses offered, to what extent did they help you learn?

Table 7: Rating of Courses on Value for Learning

The majority of students viewed First Year Courses as not a large contributing to their learning (19% “Much” or a “Great Deal”), Second Year Courses as a larger contributor to their overall learning (48% as “Much or a “Great Deal”), Third Year Courses as helpful (84% as “Somewhat” or “Much”) and Fourth Year Courses (82% “Much” or a “Great Deal”), Lab based courses and experiences (78% “Much” or a “Great Deal”), and Co-op courses and experiences (78% “Much or a “Great Deal”) as the most helpful in learning. Capstone courses and final projects were seen as somewhat helpful (50% “Much” or a “Great Deal”)
There were a total of 9 respondents from 2014-2015, 7 from 2013-2014, 6 from 2012-2013, 4 from 2011-2012, and 0 from 2010-2011. The majority of respondents from all graduating years (2014-2015 (78%), 2013-2014 (57%), 2012-2013 (50%), 2011-2012 (75%), 2010-2011 (0%)) ranked The University of Akron Exercise Science: Pre-Physical Therapy program as “Good” or “Excellent.”

**Figure 5: Cross Tabulation of Survey Questions: Graduating Year from The University of Akron AND How Would You Rate The University of Akron Exercise Science: Pre-Physical Therapy Program?**

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>Fair</th>
<th>Average</th>
<th>Good</th>
<th>Excellent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011-2012</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2012-2013</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2013-2014</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2014-2015</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>26</td>
</tr>
</tbody>
</table>
CONCLUSION AND DISCUSSION

Using an alumni survey is a very relevant tool when considering how to better a program. It has been used by many other institutions of higher education. Many other surveys tend to ask generalized questions to the entire alumni population in order to gather trends of success. Few surveys are program specific and sent out for the sole purpose of finding weak points and strong points of an academic program. Many trends of the survey itself fell in line with previous research. Generally speaking, the more recent the graduating class, the more satisfaction was found with the program as seen in Figure 5 corresponding to what Bosshart et al. (2009) found in their study. It was found that responses for the survey were higher for first year graduates as opposed to five-year graduates. The majority of the respondents were from the recent graduating classes as seen in Table 1.

Concerning the research questions there was a non-significant relationship between being enrolled or completing graduate school and finding success in the Exercise Science: Pre-Physical Therapy track. There was also a non-significant relationship between students who have graduated with a degree in Exercise Pre-Physical Therapy attending graduate for a DPT or for another major. Alumni found that exercise-based and anatomy based classes helped the most in the Exercise Science track as compared to introductory courses and supplementary courses as seen in Table 2, Table 3, Table 4, and Table 5. Alumni found exercise bases classes the most relevant, followed by anatomy and kinesiology, introductory classes, and supplementary classes respectively as seen in Figure 4. There was a general satisfaction on the emphasis placed on writing, mathematical skills, background in natural science, background in social science, and theory related courses.

There could be an increase in the amount of emphasis placed on oral communication skills, problem solving skills, learning think and reason, understanding and relating to people, application courses related to exercise science as seen in Table 6. Alumni saw fourth year courses, lab based
courses, and co-op and experiences as the most influential in their learning experience. First year courses and capstone and final projects did not rate as high in their learning experience as seen in Table 7.

In every study, there are factors that should be taken into consideration when looking at the results and the study as a whole. Some of these factors might affect the study negatively, these are limiting factors. Some limiting factors of this study include:

The small sample size from alumni, having a small sample size restricted the amount of conclusions that can reached from statistical analyses. The larger the sample size ($n$), the more normal the distribution of graph and statistical conclusions can be reached. It would be useful to send a survey out for a longer duration of time. Since the survey was available for a relatively short time, from March 24th to April 20th, it did not give ample time for respondents to respond. Allowing a greater time response, such as the duration of a semester or over the summer, would allow for a greater number of responses.

Another limiting factor was not having a survey tool made specifically for gauging pre-physical therapy program success. It is important that relevant, important questions are asked. Not having a validated pre-physical therapy survey tool allowed only a certain degree of accuracy when asking questions to alumni. The survey that was sent out was unable to be validated. Having a scientifically validated survey tool would be useful when gauging the success of The University of Akron’s Exercise Science Pre-Physical Therapy track.

Another limiting factor is not having access to alumni’s current email addresses and difficulty of obtaining email addresses. The amount of alumni that reached could be exponentially increased if there is an easy system in place to utilize known current emails of alumni. The low number of responses might be traced back to the fact that the email list is not up to date. As the years of graduation increased, the
distribution of data decreased. Making sure alumni contact information is as up to date as possible is useful in guaranteeing as many alumni are included in the survey as possible.

A possible limiting factor is social desirability bias. Although the survey stated that its answers were anonymous, the participant might still have felt the need to meet certain expectations when answering questions on the survey. To reduce this, the wording of questions might be more carefully selected.

Although possibly not the last in the list of limitations, were alumni not being able to remember in great detail the specifics of a class, participants possibly having difficulty separating course material from professor likability, and respondents answering the same question differently due to interpretation of question. These last limitations require clear wording in the survey so that those taking it have no confusion when answering. It would also useful to have short samples of class lists and class descriptions so that questions are easier to understand.
FUTURE DIRECTIONS

Through this project, I learned the difference between relevant questions and irrelevant when composing a survey. A survey is meant to be as quick and concise as possible for both the ease of the reader and the respondent. This means that questions that only half answer a question or only allude to an answer should either be discarded or reworded so that they have complete relevance to the survey. This same reasoning can be used in my future career in the medical field. No matter what patient I have, it is important to ask the right questions in order to acquire answers that are relevant to both me and the patient. Through carefully selected questions, less time will be spent trying to correct possible misinterpretations of the questions, and more time will be spent on the answers and their relevance to the patient. I also learned more concerning the area of time management. Working directly under someone and heading up a large project is something that I have done before, but in doing something this time intensive has been a learning experience. Having elongated deadlines where a project is not due on one date, but different parts are due on different dates has been a learning curve. In my professional life, this will be how the majority of projects will be. Whether it is patient information or a health program for a patient, it will likely be a process that is ongoing and in need of constant revising in order to meet the patient where he/she is. Another area where I experienced growth was working with a team. In this regard, my work had to reflect a certain level of professionalism. I learned how to evaluate and interpret statistical values. I have always read in research values that gave levels of significance but only had little knowledge on how those numbers came to be. With this project, I have a deep appreciation through hands on collection of data and interpretation of it.


APPENDIX A SURVEY TOOL

The University of Akron: Exercise Science - The Past, Present, and Future

Q1 This First section asks about demographic and education information. Instructions: Please answer the questions as accurately as possible.

Q2 What is your gender?
   ☒ Male (1)
   ☒ Female (2)

Q3 What is your graduation GPA from The University of Akron? (Choose one)
   ☒ Summa Cum Laude: 3.70 to 4.00 (1)
   ☒ Magna Cum Laude: 3.50 to 3.69 (2)
   ☒ Cum Laude: 3.30 to 3.49 (3)
   ☒ 3.00 to 3.29 (4)
   ☒ 2.50 to 2.99 (5)
   ☒ 2.00 to 2.49 (6)
   ☒ 1.99 or lower (7)

Q4 If you remember your exact GPA, please fill it in here:

Q5 Did you graduate from The University of Akron with a degree in Exercise Science: Pre-Physical Therapy? If no, you can exit the survey.
   ☒ Yes (1)
   ☒ No (2)

Q6 What is your graduating year at The University of Akron?
   ☒ 2010-2011 (1)
   ☒ 2011-2012 (2)
   ☒ 2012-2013 (3)
   ☒ 2013-2014 (4)
   ☒ 2014-2015 (5)

Q7 Have you been accepted, currently in, or successfully completed graduate school?
   ☒ Yes (1)
   ☒ No (2)

Q8 If you are attending or completed graduate school, what is the name of the school? (Please write in the institution's name).
Q9 If you are currently in Graduate School, what year are you currently undergoing?
- First (1)
- Second (2)
- Third (3)
- Fourth (4)
- Fifth (5)

Q10 Are you completing/completed graduate studies in the field of physical therapy?
- Yes (1)
- No (2)

Q11 If not physical therapy, what graduate program are you currently taking/have completed?

Q13 The next section asks about specific courses you took at The University of Akron. Instructions: Please answer the questions to the best of your ability, and rate the courses based on content/usefulness rather than professor likability.
Q14 Do you feel the introductory courses (Concepts of Health and Fitness, Intro to Exercise Science, etc.) successfully:

<table>
<thead>
<tr>
<th></th>
<th>Not much (1)</th>
<th>Little (2)</th>
<th>Somewhat (3)</th>
<th>Much (4)</th>
<th>A Great Deal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced subject matter (i.e., courses offered in exercise science, related degrees, and career goals to students) (1)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Taught material that was relevant to Exercise Science (2)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Allowed for retention (allowing students to use this information not only in Exercise Science, but also in Graduate School) (3)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Helped in other classes (4)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>
Q15 Do you feel the exercise-based classes (Exercise Testing, Exercise Prescription, Exercise Leadership, etc.) successfully:

<table>
<thead>
<tr>
<th></th>
<th>Not much (1)</th>
<th>Little (2)</th>
<th>Somewhat (3)</th>
<th>Much (4)</th>
<th>A Great Deal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced Concepts and Theories (1)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Taught material in an increasing manner of specificity (i.e. subject matter taught in a broad manner, then narrowed down in subject matter) (2)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Allowed for retention (allowing students to use this information not only in Exercise Science, but also in Graduate School) (3)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>Helped in learning information taught by other classes by allowing crossover of information (4)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>
Q16 Do you feel the anatomy-based courses (Musculoskeletal Anatomy I and II, Kinesiology, etc.) successfully:

<table>
<thead>
<tr>
<th></th>
<th>Not much (1)</th>
<th>Little (2)</th>
<th>Somewhat (3)</th>
<th>Much (4)</th>
<th>A Great Deal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced Concepts and Theories (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Taught material in an increasing manner of specificity (i.e. subject matter taught in a broad manner, then narrowed down in subject matter) (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Allowed for retention (allowing students to use this information not only in Exercise Science, but also in Graduate School) (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Helped in learning information taught by other classes by allowing crossover of information (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q17 Do you feel the supplementary courses (Nutrition, Organization and Administration for Healthcare Professionals, Medical Terminology, Stress Management, etc.) successfully:

<table>
<thead>
<tr>
<th></th>
<th>Not much (1)</th>
<th>Little (2)</th>
<th>Somewhat (3)</th>
<th>Much (4)</th>
<th>A Great Deal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced subject matter and the relevance to Exercise Science (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taught material that was relevant to Exercise Science (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowed for retention (allowing students to use this information not only in Exercise Science, but also in Graduate School) (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped in learning information taught by other classes by allowing crossover of information (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q18 Rank the relevance of class type in order from most to least:

______ Introductory Classes (1)
______ Anatomy/Kineiology (2)
______ Exercise Based (3)
______ Supplementary Based (4)
Q19 Do you feel the courses offered should place more emphasis on:

<table>
<thead>
<tr>
<th></th>
<th>Less (1)</th>
<th>Same (2)</th>
<th>More (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written communication skills (1)</td>
<td>○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral communication skills (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematical skills (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem-solving skills (4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to think and reason (5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding and relating to people (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background in natural science (e.g. chemistry, biology, and physics) (7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background in social science (e.g. economics, sociology, psychology) (8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory courses related to Exercise Science (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application courses related to Exercise Science (10)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q20 Reflecting on the courses offered, to what extent did they help you learn?

<table>
<thead>
<tr>
<th></th>
<th>Not much (1)</th>
<th>Little (2)</th>
<th>Somewhat (3)</th>
<th>Much (4)</th>
<th>A Great Deal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Courses (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Second Year Courses (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Third Year Courses (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fourth Year Courses (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Lab based courses and experiences (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Co-op courses and experiences (6)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Capstone courses and Final Projects (7)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q21 Did you acquire certifications while attending the University of Akron?
- Yes (1)
- No (2)

Q22 If yes, what certifications?

Q23 Did you feel compelled to acquire these certifications due to the professors/advisers at the University of Akron?
- Not Much (1)
- Little (2)
- Somewhat (3)
- Much (4)
- A Great Deal (5)
- Not Applicable (6)
Q24 If you are in graduate school, do you feel that these certifications helped you with admittance?
- Not Much (1)
- Little (2)
- Somewhat (3)
- Much (4)
- A Great Deal (5)
- Not Applicable (6)

Q25 Explain response to the previous question if necessary:

Q26 If you could start over, would you choose the University of Akron?
- Absolutely No (1)
- Mostly No (2)
- Neither Yes nor No (3)
- Mostly Yes (4)
- Absolutely Yes (5)

Q27 If you start over, would you have chosen to graduate with the same degree?
- Absolutely No (1)
- Mostly No (2)
- Neither Yes nor No (3)
- Mostly Yes (4)
- Absolutely Yes (5)

Q28 If you could choose another track to major in Exercise Science, what would it be?
- Fitness Management (1)
- Physiological Sciences (2)
- Strength and Conditioning (3)

Q29 Why would you choose the track according to your answer in the previous question?

Q30 How would you rate your experience at the University of Akron in preparation for graduate school?
- Poor (1)
- Fair (2)
- Average (3)
- Good (4)
- Excellent (5)
Q31 How would you rate the University of Akron Exercise Science: Pre-Physical Therapy Program?
- Poor (1)
- Fair (2)
- Average (3)
- Good (4)
- Excellent (5)

Q32 Did the courses in Exercise Science help your academic career?
- Absolutely No (1)
- Mostly No (2)
- Neither Yes nor No (3)
- Mostly Yes (4)
- Absolutely Yes (5)